

# Brazil's Largest Coffee Plantations in the World

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SAO PAULO.

THE world's largest coffee plantations are to be found here in Brazil. This country has the richest coffee soil of the world. It outranks all other lands in this crop, and the United States outranks all others in cotton. Its coffee areas are unlimited. It has now less than 5,000,000 acres under such cultivation, and this is less than one-fourth of the tillable land in Brazil. Much of the remainder will not raise coffee, but it is safe to say that ten acres more could be planted for every one that is now tilled and that the coffee trees might be multiplied indefinitely. At present the trees in bearing number more than 1,320,000,000, and they occupy a space about one-fifth the size of Ohio. They cover, all told, less ground than Massachusetts. When it is remembered that Brazil would make 400 states as big as Massachusetts, one gets some idea of the coffee areas and the possibilities.

The best coffee-bearing states are four. They are Sao Paulo, Minas Gerais, Rio de Janeiro and Espirito Santo. They have an area about ten times the size of Ohio, and only one-fifth of their land is in coffee. They lie in the center of Brazil and are largely made up of highlands. The best plantations lie at from 1,500 to 3,000 feet above the sea.

Of all the coffee states, Sao Paulo leads. It has more than half of the coffee trees of Brazil, occupying an area of more than two and one-half million acres and representing an invested capital amounting to more than \$200,000,000. Sao Paulo has more than 15,000 coffee plantations, and upward of 1,000 of these have each 200,000 or more trees. The trees of some of the plantations run into the millions, and one which I have visited has more than 6,000,000 trees, with 100,000 acres under cultivation. There is another plantation that contains 300,000 acres, and Monte Alegre, one of the estates of Francisco Schmidt, has 75,000 acres, of which about 20,000 are devoted to one million coffee trees of the Bourbon variety. They produce something like 5 million pounds of coffee every year. On that estate there are drying grounds covered with tiles which have an area of something like fifty acres, and the cleaning and grading machinery has been imported from England. The animals on the plantation include a thousand horses and mules, and over three thousand cattle. The laborers make a community of almost 5,000, and the tenant houses number 1,200. In addition to this estate, Francisco Schmidt has about twenty other scattered estates and there throughout the coffee-raising area. He has altogether millions of trees and is the coffee king of the world. He is a German who started as a poor boy, and is now rich beyond the dreams of avarice.

Another big plantation belongs to the Barão Geraldo de Renzede. It is forty miles long and thirty miles wide, and contains a million coffee trees, and its annual crop is about 2,000,000 pounds. The Fazenda Santa Theresia has more than a million coffee trees, and its annual crop is about 2,000,000 pounds. It is situated in the state of Minas Gerais, and the coffee berries are carried to the drying grounds on canals and railroads.

Nearly all these large plantations are equipped with railroads, and many have machinery driven by electricity. Some have model settlements for their employees, including schools for the children and hospitals for the sick. Many of the owners have stock farms connected with their coffee lands. Some live in beautiful houses equipped with all the luxuries and conveniences of modern city life.

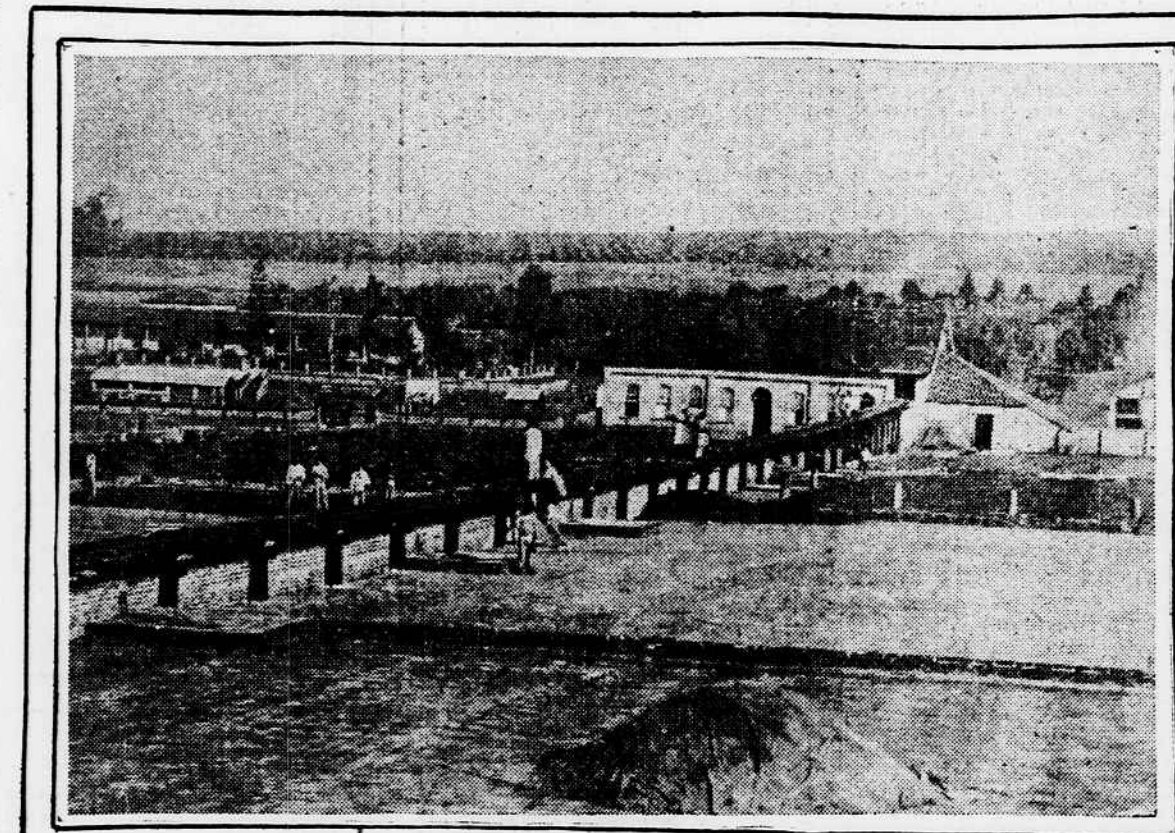
I wish I could show you the Dumont coffee estate. This is one of the finest coffee estates of the world. It lies more than three hundred miles inland from this town of Sao Paulo. It is about twelve miles from Ribeirão Preto and in the center of one of the richest coffee-growing regions of Brazil. The estate was originally founded by Dumont, the father of Santos Dumont, the famous aviator. It is now a British concern, operated with capital from England, and its profits in some years are as much as \$600,000.

All going to the Dumont fazenda I passed through hundreds of thousands of acres devoted to coffee. I went by plantation after plantation, where gangs of Italian men and women at work picking the berries, and by vast cement floors upon which great

carpets of coffee beans were spread out in the sun to dry. The lands through which I passed are noted for their excellent soil. That used for growing the coffee is of a bright red color. It looks like brick dust, and in the dry, dusty weather it had covered everything with a brick dust hue. The tropical sun had turned the earth to a red powder, and the air was filled with red clouds. The green of the trees was tinted with the dust, and in places the freshly plowed plants shone red instead of green.

The wind was blowing during my railroad ride through the plantations. It threw the dust into my face, and I had the complexion of an Indian. My cuffs became a bright vermilion, and the only thing about me not seriously changed was my hair, which my friends indulgently call golden, but which

WHERE Coffee Is King—The Great Plantations of Sao Paulo and How They Are Managed—Men Who Own Millions of Trees—Francisco Schmidt, the Coffee Baron. Frank G. Carpenter Visits the Dumont Fazenda, Which Covers 30,000 Acres—How Coffee Is Raised—A Railroad Ride Over the Estate—A Look at the Drying Floors—How Brazil Is Trying to Regulate the Crop—Its Chief Competitors—The Exports From Porto Rico and Hawaii Increasing.



DRYING FLOORS OF A GREAT COFFEE PLANTATION. MONTE ALEGRE HAS FIFTY ACRES OF SUCH FLOORS COVERED WITH TILE.

really is of a brick dust hue. This red soil is made of decomposed granite mixed with decayed vegetable growth. It has a large percentage of silicic acid and iron. The decomposition had turned the soil into a brick dust hue, and the coffee trees, which are of the Bourbon variety, are planted in rows. The best plantations are on the sides of the hills. The country is rolling and hilly, and the coffee trees are planted in rows. The coffee trees are planted in rows, and the coffee berries are carried to the drying grounds on canals and railroads.

Suppose we take one of the cars and ride up the side fields. The engine carries us up hill and down through a great coffee garden. In front and behind us as far as we can see are long lines of green bushes. There are bushes to the right and to the left. All are coffee trees, and most of them are laden with coffee. Notice the plants in that field over there. They are new trees, and have been set out only a year. They are not as high as your knee. The smaller plants farther on

covered with sticks have been in the ground only a month. The bearing trees are from ten to fifteen feet high. How green everything is! There is green in the picking, and they are paid at so much per basket. In one day a man should gather enough coffee berries to make fifty pounds of dried coffee. The baskets hold about three-fourths of a bushel, and the price paid ranges from 12 cents to 18 cents per basket, according to the season. The pickers earn from \$1.25 to \$2.50 per day.

After the picking, the berries are carried on the train to the drying floors and to the factories. The coffee is then dried, and the beans are left out in the sun all day long, and are stirred about by wooden rakes so that every part of each berry receives its share of the heat. The men who do the raking are in their bare feet. They walk about among the coffee trees, and they perspire as they work. The Lord told Adam "In the sweat of thy face shalt thou eat bread." Our first father had not yet learned to drink coffee. Nevertheless the curse has come down to us. It is important that the coffee be evenly dried. The grains sometimes lie for weeks on the platforms. They must be kept dry and must be covered with a tarpaulin. They are also gathered into piles at night and covered to keep off the dew.

After a time the beans are as dry as a bone. They do not yet look at all like the coffee we have in the stores. They are as white as ivory, and almost as hard. Each bean has now to be skinned. As it lies in the cherry it has a soft, fleshy part, and the outside coat is thick and the color of a new drum-head. It is known as the parchment skin, and the inside coat is as thin as a cobweb. It is called the silver skin. Both of these coats have to be taken off before the coffee is of the olive green color that it has in our stores.

This work is done by expensive machinery. That on the Dumont Fazenda is of the most modern kind, and it will clean and grade 20,000 pounds of coffee a day. The coffee beans are first run through ventilators, which fan off the rubbish and dust. They then go into corrugated wheels of cast iron so arranged that the skin on the beans is broken as they pass over it, without hurting or scratching the



MAP SHOWS COFFEE AREA IN BRAZIL. PHOTO SHOWS HOW THE COFFEE BEANS FALL INTO THE GRADING MACHINES.

acres of such floors, and just now tens of thousands of pounds of these white coffee beans are drying upon them. The beans are left out in the sun all day long, and are stirred about by wooden rakes so that every part of each berry receives its share of the heat. The men who do the raking are in their bare feet. They walk about among the coffee trees, and they perspire as they work. The Lord told Adam "In the sweat of thy face shalt thou eat bread." Our first father had not yet learned to drink coffee. Nevertheless the curse has come down to us. It is important that the coffee be evenly dried. The grains sometimes lie for weeks on the platforms. They must be kept dry and must be covered with a tarpaulin. They are also gathered into piles at night and covered to keep off the dew.

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## Navy Office Heads Greatest Wireless System in Existence

THE story of the development of wireless communication in the United States is a story of only sixteen years. When that story comes to be written the historian will find that the major portion of his material and notes accumulated for his task relates to the activities of the United States navy. In that portion of the story, the figure of Capt. William H. G. Bullard, U. S. N., is prominent.

For just as the navy pioneered in wireless, so, within the navy, Capt. Bullard was a leader of the pioneers. It really was seventeen years ago that Capt. Bullard, then a young naval lieutenant, fresh from Spanish-American war service, was attracted by the new subject. During his student days at Annapolis electricity and electrical engineering had attracted him. These studies he carried on further following graduation. He became known as one of the "electrical sharps" of the navy.

Wireless appealed to him, both as an electrical engineer and as a military officer. With his knowledge of electricity the military possibilities that lay in wireless were readily apparent. So he threw himself into the subject.

He is now—and has been ever since the position was established three years ago—superintendent of the navy radio service. In that capacity he is charged with the direction of the most extensive wireless service in the world today. More than fifty shore stations, approximately 250 ship stations and about 750 navy radio operators are under his direction.

Exigencies of the European war compelled the government to take over the wireless plants, the only private plants in the country communicating directly with the continental Europe. Officers and men of the navy, under the direction of Capt. Bullard, are operating these plants.

Necessarily rather than premeditation caused the navy radio service to go into general commercial radio telephony throughout its system. Since this gratuitous service, much of it paid for, about \$50,000 a year represents the revenue from the commercial operations.

As well on the quarter deck as in an executive office, for Capt. Bullard is a sailor man first and an electrical engineer and director of a vast, wide system of communication second.

Born in Pennsylvania in December, 1866, he is not quite forty-nine years old. In 1887 he was appointed to the Naval Academy, from which institution he was graduated four years later, but to which he has returned for four different tours of duty as a member of the faculty. Physics, chemistry and electrical engineering have been the branches he has taught, and a textbook he has written on electrical engineering is standard there and elsewhere.

He originated and for a period of four years was at the head of the new department of electrical engineering at the Naval Academy, serving in that capacity from 1907 to 1911. Through the navy are scores of young officers who owe their knowledge of electrical engineering and fondness for the science to the Bullard inspiration.

In the navy, no matter what may be the scientific attainments of an officer, he has to perform the roughest of the service. Hence Capt. Bullard has more than sixteen years of sea duty to his credit, his last command being the torpedo boat destroyer, the USS Albatross, which he commanded for Spanish commerce raiding in the Philippine and Chinese waters, and an education in Latin American relations came through a three-year cruise in South America. All this, however, was but by the way. The radiating spark was what occupied Capt. Bullard's thoughts chiefly.

In 1899, the year following the Spanish-American war, Mr. Marconi brought this country from Italy three sets of his wonderful new wireless apparatus, the immediate purpose being to use them in reporting the international yacht races of that year. The Navy Department, long interested in the subject, appointed a board of four officers to observe and report on the workings of the system.

Following the report of this board the department placed the battleship Massachusetts, then armored cutter New York and the torpedo boat Porter at the disposal of Mr. Marconi for further experiments with a shore station established on the grounds of the

CAPT. W. H. G. BULLARD, U. S. N., Superintendent of the Naval Radio Service, Who Has Given Eighteen Years of Study to Radio Communication, in Command of a World-Wide Organization—Father of the Electrical Engineering Course at Naval Academy, He Pioneered in Wireless Work in This Country—He Tells How Washington Talks With Manila, With Japan and With Siberia—Naval Wireless as an Aid to Commerce as Well as to the Fleet.

Highland lighthouse, near the entrance to New York harbor. An antenna was stretched from the flag pole near the house of the lightkeeper, and this had the distinction of being the first radio shore station used in the United States. Later a commercial station was erected near the same spot; and still later, in 1903, the navy put up a permanent shore station.

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stance, bulked big. The navy radio service was in commercial telegraphy up to its neck. It must follow the lead of the French, the Germans, the Japanese and the Americans, and the navy had to be ready to meet the competition.

Whereupon the radio work was organized as an administrative unit, and Capt. Bullard was detailed as superintendent. The bureau of steam engineering still provides material, but the administration of affairs is under the direction of Capt. Bullard.

For convenience his headquarters are established in the building at the Arlington station, but so rapid has been the extension of the service and so great has the business grown that already he and his administrative staff are cramped for space. Another small building is being erected for general headquarters, the rooms now occupied being required for the uses of the station itself.

The public knows this place as the Arlington station. In reality and officially it is Radio, Va., with its own post office, a navy mail clerk being permanent, that serves not only the force at the station, but the civil community roundabout.

Observe the radio map hanging on the walls of Capt. Bullard's office and you will get an idea of the wide extent of the shore service—no map can show the ever-changing locations of the 250 ships of the navy that are equipped with wireless. Big circles mark the ports of Atlantic, gulf and Pacific coasts where navy radio stations are maintained, with a starry big circle in the interior showing the station on the great lakes at the Chicago naval training station.

The jurisdiction of the Treasury Department, all have wireless equipment aboard, while in the Department of Commerce is lodged supervision and regulation control over commercial and amateur wireless operators; but since 1904, by executive action of the President, the navy is supreme in the field of coast stations. Commercial stations operate, of course, on the coast, but they must not be so located as to interfere with the operation of navy radio stations.

The system is a heavy expense without value to the army, and on several occasions the War Department has implored Congress to let the Post Office Department handle the cable and wire lines. Sooner or later the army wireless plants there will be abandoned.

When wireless first came into being in the navy the old bureau of equipment handled it, but subsequently the duties were absorbed by the bureau of steam engineering. Then the passage of the radio act by Congress in 1912, with its provision for a navy radio system, transferred the navy's radio work to the navy. The navy is supreme in the field of coast stations. Commercial stations operate, of course, on the coast, but they must not be so located as to interfere with the operation of navy radio stations.

The organization of the naval radio service is a growth and a development. When wireless first came into being in the navy the old bureau of equipment handled it, but subsequently the duties were absorbed by the bureau of steam engineering. Then the passage of the radio act by Congress in 1912, with its provision for a navy radio system, transferred the navy's radio work to the navy. The navy is supreme in the field of coast stations. Commercial stations operate, of course, on the coast, but they must not be so located as to interfere with the operation of navy radio stations.

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Other interests who receive from the same dwellers on the far shores of Alaska and source weather bulletins; passengers the insular possessions, who have aboard ship, who receive the daily news and other means of communication—all these bulletins broadcasted over the ocean hours; And the cost? It is trifling by com-

parison with what is accomplished, for of all means of communicating the wireless is the cheapest. Last year Congress gave for new installations at high power stations \$1,500,000, and for maintenance \$500,000, the \$1,500,000 to be a continuing appropriation until expended. For the coming year probably only \$750,000 for all purposes will be required.

Of course, the navy is not the only branch of the government that has wireless equipment. The army, for example, maintains a cable from Puget sound to Alaska, an extensive system of wire telegraphs in Alaska, and also several wireless stations there, all engaged in commercial as well as public business. That is because the telegraphs followed a troum of steamships in the northern territory in the early days.